

Also enclosed please find a substitute specification which replaces the specification as originally filed. The substitute specification contains no new matter and merely corrects grammatical errors found in the original specification.

In The Claims

Please cancel Claims 1-20. Please add new Claims 21-76 as follows:

21. Apparatus for selectively interfering with pathological cells survival processes in vitro and in vivo comprising:

means for generating static magnetic (S) fields crossing a working environment;

means for generating electromagnetic extremely low frequency (ELF) fields over said working environment in addition to said S fields;

means for modulating said S fields associated to said means for generating S fields, said means for modulating said S fields setting the intensity of said S fields between 1 and 100 mT as recited in a predetermined function of intensity versus time;

means for modulating said ELF fields associated to said means for generating ELF fields, said means for modulating said ELF fields setting said ELF fields as recited in a predetermined function of amplitude of intensity between 1 and 100 mT and frequency between 1 and 1000 Hz versus time.

22. Apparatus for selectively interfering with pathological cells survival processes in vitro and in vivo comprising:

means for generating static magnetic (S) fields crossing a working environment;

means for modulating said S fields associated to said generating means, said means for modulating the S fields setting the intensity of said S fields between 1 and 100 mT as recited in a predetermined function of intensity versus time.

23. Apparatus for selectively interfering with pathological cells survival processes in vitro and in vivo, comprising:

means for generating electromagnetic extremely low frequency (ELF) fields over said working environment;

means for modulating said ELF fields associated to said means for generating, said means for modulating said ELF fields setting said ELF fields as recited in a predetermined function of amplitude of intensity between 1 and 100 mT and frequency between 1 and 1000 Hz versus time.

24. Apparatus as recited in Claim 21 wherein said means for modulating said S fields comprises program means that set said intensity following a plurality of predetermined step values I_{s1} , I_{s2} , I_{s3} , I_{sn} for corresponding time intervals T_1 , T_2 , T_3 , T_n .

25. Apparatus as recited in Claim 22 wherein said means for modulating said S fields comprises program means that set said intensity following a plurality of predetermined step values I_{s1} , I_{s2} , I_{s3} , I_{sn} for corresponding time intervals T_1 , T_2 , T_3 , T_n .

26. Apparatus as recited in Claim 21 wherein said means for modulating said ELF fields comprises program means that set said intensity amplitude following a plurality of predetermined step values I_{ELF1} , I_{ELF2} , I_{ELF3} , I_{ELFn} for corresponding time intervals T_1 , T_2 , T_3 , T_n .

27. Apparatus as recited in Claim 23 wherein said means for modulating said ELF fields comprises program means that set said intensity amplitude following a plurality of predetermined step values I_{ELF1} , I_{ELF2} , I_{ELF3} , I_{ELFn} for corresponding time intervals T_1 , T_2 , T_3 , T_n .

28. Apparatus as recited in Claim 21 wherein said means for modulating said ELF fields comprises program means that set said frequency following a plurality of predetermined step values f_1, f_2, f_3, f_n , for corresponding time intervals T_1, T_2, T_3, T_n , said step values being comprised between 10 and 100 Hz.

29. Apparatus as recited in Claim 23 wherein said means for modulating said ELF fields comprises program means that set said frequency following a plurality of predetermined step values f_1, f_2, f_3, f_n , for corresponding time intervals T_1, T_2, T_3, T_n , said step values being comprised between 10 and 100 Hz.

30. Apparatus as recited in Claim 21, wherein said means for modulating said S and ELF fields comprises program means that set an S/ELF ratio as recited in a plurality of predetermined step values $Is_1/IELF_1, Is_2/IELF_2, Is_3/IELF_3, Is_n/IELF_n$, for corresponding time intervals T_1, T_2, T_3, T_n .

31. Apparatus as recited in Claim 30, wherein said program means set said S and ELF fields as recited in an overall intensity between 1 and 30 mT and respectively a ratio S/ELF comprised between 0,1 and 10.

32. Apparatus as recited in Claim 30, wherein said program means set said S and ELF fields as recited in an overall intensity between 1 and 10 mT and respectively a ratio S/ELF comprised between 0,5 and 5.

33. Apparatus as recited in Claim 24 wherein said program means set said time intervals between 1 and 40 minutes.

34. Apparatus as recited in Claim 25 wherein said program means set said time intervals between 1 and 40 minutes.

35. Apparatus as recited in Claim 26 wherein said program means set said time intervals between 1 and 40 minutes.

36. Apparatus as recited in Claim 27 wherein said program means set said time intervals between 1 and 40 minutes.

37. Apparatus as recited in Claim 28 wherein said program means set said time intervals between 1 and 40 minutes.

38. Apparatus as recited in Claim 29 wherein said program means set said time intervals between 1 and 40 minutes.

39. Apparatus as recited in Claim 30 wherein said program means set said time intervals between 1 and 40 minutes.

40. Apparatus as recited in Claim 31 wherein said program means set said time intervals between 1 and 40 minutes.

41. Apparatus as recited in Claim 32 wherein said program means set said time intervals between 1 and 40 minutes.

42. Apparatus as recited in Claim 1 wherein at least a portion of said working environment is defined by walls permeable to said fields.

43. Apparatus as recited in Claim 2 wherein at least a portion of said working environment is defined by walls permeable to said fields.

44. Apparatus as recited in Claim 3 wherein at least a portion of said working environment is defined by walls permeable to said fields.

45. Apparatus as recited in Claim 1 wherein said means for generating said S and/or ELF fields comprise at least a first and a second coil respectively surrounding at least a portion of said working environment, said means for modulating providing to said coils DC and/or AC current respectively.

46. Apparatus as recited in Claim 2 wherein said means for generating said S and/or ELF fields comprise at least a first and a second coil respectively surrounding at least a portion of said working environment, said means for modulating providing to said coils DC and/or AC current respectively.

47. Apparatus as recited in Claim 3 wherein said means for generating said S and/or ELF fields comprise at least a first and a second coil respectively surrounding at least a portion of said working environment, said means for modulating providing to said coils DC and/or AC current respectively.

48. Apparatus as recited in Claim 1 wherein said means for generating said S and/or ELF fields comprise at least a first and a second coil coaxial to each other, said working environment being placed between said first and a second coil and said means for modulating providing to said coils DC and/or AC current respectively.

49. Apparatus as recited in Claim 2 wherein said means for generating said S and/or ELF fields comprise at least a first and a second coil coaxial to each other, said working environment being placed between said first and a second coil and said means for modulating providing to said coils DC and/or AC current respectively.

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50. Apparatus as recited in Claim 3 wherein said means for generating said S and/or ELF fields comprise at least a first and a second coil coaxial to each other, said working environment being placed between said first and a second coil and said means for modulating providing to said coils DC and/or AC current respectively.

51. Apparatus as recited in Claim 1 wherein means are provided for creating through said working environment a static electric field, or a low frequency variable electric field up to 1000 Hz, having intensity up to 20 kV/m.

52. Apparatus as recited in Claim 2 wherein means are provided for creating through said working environment a static electric field, or a low frequency variable electric field up to 1000 Hz, having intensity up to 20 kV/m.

53. Apparatus as recited in Claim 3 wherein means are provided for creating through said working environment a static electric field, or a low frequency variable electric field up to 1000 Hz, having intensity up to 20 kV/m.

54. A method of using SELF non-thermal fields for selectively interfering with pathological cells' survival, such as in particular cells affected by cancer, viral infections, autoimmune diseases, neurodegenerative disorders and AIDS comprising applying said SELF non-thermal fields having intensity in the range of between 1 and 100 mT.

55. A method of using SELF non-thermal fields as recited in Claim 54 wherein said method comprises applying S fields followed by ELF fields.

56. A method of using SELF non-thermal fields as recited in Claim 54 wherein said method comprises applying ELF fields followed by S fields.

57. A method of using SELF non-thermal fields as recited in Claim 54 wherein said method comprises applying ELF and S fields concurrently.

58. A method of using SELF non-thermal fields as recited in Claim 54 wherein said method comprises applying S fields alone.

59. A method of using SELF non-thermal fields as recited in Claim 54 wherein said method comprises applying ELF fields alone.

60. A method of using SELF non-thermal fields as recited in Claim 54 wherein said ELF fields have a field frequency in the range of between 1 and 1000 Hz.

61. A method of using SELF non-thermal fields for biotechnological genes modifications, comprising applying said SELF non-thermal fields to said biotechnological genes to be modified, where said SELF non-thermal fields have intensity in the range between 1 and 100 mT.

62. A method of using SELF non-thermal fields as recited in Claim 61 wherein said method comprises applying S fields followed by ELF fields.

63. A method of using SELF non-thermal fields as recited in Claim 61 wherein said method comprises applying ELF fields followed by S fields.

64. A method of using SELF non-thermal fields as recited in Claim 61 wherein said method comprises applying ELF and S fields concurrently.

65. A method of using SELF non-thermal fields as recited in Claim 61 wherein said method comprises applying S fields alone.

66. A method of using SELF non-thermal fields as recited in Claim 61 wherein said method comprises applying ELF fields alone.

67. A method of using SELF non-thermal fields as recited in Claim 61 wherein said ELF fields have a field frequency in the range of between 1 and 1000 Hz.

68. A method of using SELF non-thermal fields as recited in Claim 61 wherein biotechnological gene is a mutant p53 gene.

69. A method of using SELF non-thermal fields as recited in Claim 54, further including the step of applying chemical substances in addition to the SELF fields.

70. A method of using SELF non-thermal fields as recited in Claim 61, further including the step of applying chemical substances in addition to the SELF fields.

71. A method of using SELF non-thermal fields as recited in Claim 54, wherein said SELF non-thermal fields are applied in different sequences, and said sequences are set for time intervals T_1 , T_2 , T_3 , T_n , and wherein in said time intervals the intensity of said S and/or ELF fields are set at steady values I_{S1} , I_{S2} , I_{S3} , I_{Sn} ; I_{ELF1} , I_{ELF2} , I_{ELF3} , I_{ELFn} , I_{S1}/I_{ELF1} , I_{S2}/I_{ELF2} , I_{S3}/I_{ELF3} , I_{Sn}/I_{ELFn} respectively.

72. A method of using SELF non-thermal fields as recited in Claim 61, wherein said SELF non-thermal fields are applied in different sequences, and said sequences are set for time intervals T_1 , T_2 , T_3 , T_n , and wherein in said time intervals the intensity of said S and/or ELF fields are set at steady values I_{S1} , I_{S2} , I_{S3} , I_{Sn} ; I_{ELF1} , I_{ELF2} , I_{ELF3} , I_{ELFn} , I_{S1}/I_{ELF1} , I_{S2}/I_{ELF2} , I_{S3}/I_{ELF3} , I_{Sn}/I_{ELFn} respectively.

73. A method of using SELF non-thermal fields as recited in Claim 54, wherein said S and ELF fields are set at an overall intensity in the range of between 1 and 30 mT with a S/ELF ratio in the range of between 0.1 and 10.

74. A method of using SELF non-thermal fields as recited in Claim 61, wherein said S and ELF fields are set at an overall intensity in the range of between 1 and 30 mT with a S/ELF ratio in the range of between 0.1 and 10.

75. A method of using SELF non-thermal fields as recited in Claim 54, wherein said S and ELF fields are set at an overall intensity in a range between 1 and 10 mT with a S/ELF ratio in the range of between 0.5 and 2.5.

76. A method of using SELF non-thermal fields as recited in Claim 61, wherein said S and ELF fields are set at an overall intensity in a range between 1 and 10 mT with a S/ELF ratio in the range of between 0.5 and 2.5.

Respectfully submitted,



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